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## PATENT COOPERATION TREATY

## PCT

REC'D 22 FEB 2005

INTERNATIONAL PRELIMINARY REPORT ON PATENT PRIORITY  
(Chapter II of the Patent Cooperation Treaty)

PCT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>115899 USN</b>	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. <b>PCT/SE2002/001977</b>	International filing date (day/month/year) <b>30-10-2002</b>	Priority date (day/month/year) <b>---</b>
International Patent Classification (IPC) or national classification and IPC <b>H04L 12/56, H04L 12/28</b>		
Applicant <b>Telefonaktiebolaget LM Ericsson et al.</b>		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand <b>14-05-2004</b>	Date of completion of this report <b>07-02-2005</b>	
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer  <b>Roger Bou Faisal /LR</b> Telephone No. +46 8 782 25 00	

Form PCT/IPEA/409 (cover sheet) (January 2004)

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## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ the international application as originally filed/furnished
- ☐ the description:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	<u>1-3</u>	YES
	Claims	<u></u>	NO
Inventive step (IS)	Claims	<u></u>	YES
	Claims	<u>1-3</u>	NO
Industrial applicability (IA)	Claims	<u>1-3</u>	YES
	Claims	<u></u>	NO

**2. Citations and explanations (Rule 70.7)**

The object of the invention is to provide a method in an ad-hoc network in a WLAN-system where a node can establish and maintain reliable communication paths via other nodes in the ad-hoc system.

The problems with earlier systems are that neighbouring nodes can be falsely detected and the quality of the link between neighbouring nodes can be very poor.

These problems are solved in the present invention by providing to the nodes tables of other nodes within the network which can be used for forwarding messages in the network and when receiving signals from other nodes in the system, comparing the signals to a predetermined comparison level.

Document cited in the International Search Report:

D1: WO 02078229, A1  
D2: US 2002071395, A1  
D3: WO 02073354, A2  
D4: WO 01030035, A3  
D5: US 2002061001, A1

Document D1 is considered to represent the closest prior art. D1 relates to an access and routing protocol for ad-hoc networks e.g. mobile wireless networks using synchronous collision resolution and node state dissemination. The method of D1 provides efficient ad hoc network organization and quality of service. It also Supports energy conservation for the mobile nodes (abstract; Paragraph [30]-[47] and claims 1-23).

.../...

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX V

The invention according to independent claim 1 differs from D1 by the step of building tables of forwarding nodes and the step of analysing the signals. These steps solve the problems of connecting to false nodes and/or connecting to other nodes over poor channel quality.

These steps/procedures are however considered to be equivalent to the routing tables procedures used for updating, signal measuring, rout control and path evaluation that are described in D1. Routing tables are used for information about neighbouring forwarding nodes and other nodes connected to the ad-hoc system. Comparing the signal to a predetermined threshold value or to an earlier received signal are steps considered obvious to a person skilled in the art aiming to achieve acceptable quality on the communications path, see the quality of service (QoS) parameters used for setting up a communications path in D1.

See also D2 and D3 where the procedure of updating and finding neighbours in the nodes transmission range that could be used for forwarding messages, is mentioned. The determination of forwarding neighbours is based on QoS parameters like link state and power information (see D2, [0008], [0045]-[0065] and claims 1-25; D3, page 1-page 3, page 7-page 8 and claims 1-40)

Thus the invention according to independent claim 1 is not considered to involve an inventive step, with reference to D1.

The invention according to dependent claims 2 and 3 involves only steps that are mentioned in D1 and therefore not considered to involve an inventive step.